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ABSTRACT

The present study was conducted to determine if overt self-verbalization by the child during the waiting period would influence his delay maintenance behavior when the delayed reward was present. Subjects were 60 preschool girls in the age range of 33-72 months. Fifteen subjects were randomly assigned to each of four experimental conditions: (1) rule verbalization, (2) neutral verbalization, (3) reward verbalization, (4) no verbalization. In each condition a supply of M&M candy rewards was placed one by one on the table at 5-second intervals until the child took them or told the experimenter to stop. Possession of the accumulating candy rewards was made contingent on the child's stopping any further accumulation. (The child had previously been told that all the candy put on the table would belong to him or her.) The child was told to overtly verbalize a specific utterance whenever the light was on. A red signal light operated by the experimenter was used as a cue for the overt verbalizations. Findings indicated that overt self-verbalizations by preschool girls during the waiting period significantly influenced their delay maintenance behavior. Results are discussed in terms of attending behavior, and it is noted that verbal mediation is facilitative only for younger children. It is suggested that subject-governed self-control mechanisms could result in increased stability of self-control in children. (GO)

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OVERT VERBALIZATION AND DELAY MAINTENANCE BEHAVIOR IN PRESCHOOL CHILDREN

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Presented at the Biennial Meeting of the Society for Research in Child Development, Denver, April, 1975. The authors wish to dedicate this paper to William R. Looft.

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The development of the ability to forego immediate pleasure for the sake of later gratification in children has long been of considerable interest to psychologists (e.g., Freud, 1911). It is only fairly recently that programmatic investigation of self-imposed delay of gratification has been undertaken. Initial efforts, reviewed by Mischel (1966), concentrated on factors that influenced the child's verbally-expressed choice when he was presented with two competing alternatives--the choice between a less valued reward immediately available versus a more valued reward available in the future. More recently, self-imposed delay of gratification has been approached as a two-phase process. The verbal choice of an immediate or delayed reward is only the first phase. The second phase involves the processes that maintain the child through the delay period after he has decided to wait. It is this aspect of delay of gratification--delay maintenance behavior--that is the focus of the present investigation.

Past research on delay maintenance behavior in children has revealed that delay maintenance can be influenced by what the waiting child is instructed to think about and/or attend to (Mischel & Ebbesen, 1970; Mischel, Ebbesen, & Zeiss, 1972). If the child thought about the delayed reward or attended to it during the waiting period, his delay maintenance behavior was impaired, that is, he did not wait very well and even sought to end the waiting period prematurely. If the child was distracted from the delayed reward, delay maintenance behavior was facilitated in that he waited more successfully.

The present study was conducted to determine if overt self-verbalization by the child during the waiting period would influence his delay maintenance behavior when the delayed reward was present. Past research has demonstrated that overt self-verbalization improved the performance of young children on a variety of tasks including tasks which involved self-control. For example, self-verbalization about the rightness or wrongness of actions has been shown to influence cheating in first graders (O'Leary, 1968) and, in another study, self-verbalization has been shown to affect the temporal stability of the preschool child's ability to resist touching a set of attractive but prohibited toys (Toner and Parke, 1973).. Overt self-verbalization of task-related utterances could thus prove to be a powerful mechanism to facilitate or impair the child's delay maintenance behavior. Indeed, Mischel has noted in his recent studies that preschool children often spontaneously talked aloud to themselves during the delay period even though they were not instructed to do so.

The initial prediction of the present study was that the delay maintenance behavior of preschool children would be influenced by their self-verbalization of specific utterances during the waiting period. Consistent with past findings, if the content of the utterance did not specifically refer to the delayed reward, the preschool child's delay maintenance behavior was expected to be facilitated. If the utterance referred to the goodness of the act of waiting, delay maintenance behavior was expected to be further facilitated since, in effect, the child would be reinforcing himself for waiting. Overt self-verbalization was expected to impair delay maintenance behavior in preschool children if the utterance referred specifically to the delayed reward, especially if the utterance mentioned the pleasantness of that reward. Finally,

delay maintenance behavior was expected to be impaired if no instruction to self-verbalize was given, thus offering no diversion from the increasing frustration of waiting for, but not possessing, the physically present delayed reward.

METHOD

The subjects were 60 preschool girls from the Charlotte, North Carolina vacinity and the girls ranged in age from 33 months to 72 months with a mean age of 54 months. The experimenter was a female undergraduate student in her early twenties. Fifteen subjects were randomly assigned to each of four experimental conditions and each child was tested individually. Three of the four experimental conditions involved instruction to the child to overtly verbalize specific utterances. This self-verbalization by the child occurred during a task in which possession of accumulating candy rewards was made contingent upon the child's stopping further accumulation of the rewards. The fourth condition involved no instruction to the child to self-verbalize during the task.

For all experimental conditions, a supply of M & M candy rewards and a red signal light (activated by a foot pedal) were used.

For all of the girls, the experimenter read the rules of the "candy game" which stated that all of the candy that was put on the table would belong to the child. The child was told that M & M's would be put on the table, one at a time, until she (the child) took them or told the experimenter to stop. Possession of the accumulating candy rewards was thus made contingent upon the child's stopping any further accumulation.

In order to get the child to self-verbalize, the experimenter said that a second game would be played along with the candy game. In the second game, the child was told to overtly verbalize a specific utterance

whenever the red light went on. For girls in the first experimental condition the utterance was, "It is good if I wait." This group was called the rule verbalization group. The second condition involved having preschool girls say, "One, two, three, four, five" whenever the light went on. This was the neutral verbalization group. The third group of girls said, "The candy will taste good" and was called the reward verbalization group. The fourth group of girls was not instructed to say anything aloud and constituted the no verbalization group.

Once begun, the sequence of events was as follows: the experimenter placed one M & M candy on the table in front of the child and said, "You can take the candy now or you can wait for more if you want to." Five seconds after stating the alternatives, the experimenter turned on the red light and the child overtly verbalized the utterance of her experimental group. Thirty seconds after the placement of the previous M & M, the sequence was repeated and the candy accumulated as the child waited. After ten minutes, if the child had not stopped the game, the experimenter said that the game was over and the child was given the 20 accumulated candies. The number of seconds that elapsed between the placement of the first candy and the termination of the game either by the child or by the experimenter constituted the measure of duration of delay maintenance behavior. Six hundred seconds was the maximum score.

RESULTS

Overt self-verbalization by preschool girls during the waiting period significantly influenced their delay maintenance behavior ($F = 4.96$, $df = 3, 56$, $p < .005$). Girls in the rule verbalization condition who said, "It is good if I wait" waited an average of 424.9 seconds. Girls in the neutral verbalization condition who said, "One, two, three, four, five"

waited an average of 408.2 seconds. Girls in the reward verbalization condition who said, "The candy will taste good" waited an average of 192.8 seconds. Finally, girls in the no verbalization condition waited an average of 163.5 seconds.

Girls in the rule verbalization condition and in the neutral verbalization condition waited significantly longer than did girls in the no verbalization condition. Girls in the rule verbalization condition and in the neutral verbalization condition waited significantly longer than did girls in the reward verbalization condition. Rule verbalization and neutral verbalization girls did not significantly differ in delay times and no verbalization and reward verbalization girls also did not significantly differ in delay times.

The pattern of results is consistent with the findings of Mischel and his colleagues regarding attention and delay maintenance behavior. Effective delay maintenance for the preschooler may have depended on the child's diverting her attention from the delayed reward through the mechanism of overt self-verbalization. Specific utterances that may distract the child from the reward, whether task related ("It is good if I wait") or not ("One, two, three, four, five") resulted in longer waiting times than the utterance which mentioned the reward ("The candy will taste good") or silence, a condition which failed to provide distraction from the reward. An investigation is now under way to determine if the specific utterances used in the present study do in fact affect the attending behavior of the waiting child.

The demonstration of the influence of self-verbalization on the preschool child's behavior does not, of course, imply that the mechanism of self-verbalization is equally effective for older children. John Flavell (Flavell, Beach & Chinsky, 1966) has suggested that, although preschool

aged children often need instructions to self-verbalize to improve their performance on many tasks, older children may not need such instructions since they often spontaneously produce aids to performance. The present study is now being replicated with a sample of older children to assess developmental changes in the role of overt self-verbalization on the child's delay maintenance behavior.

Further, subject-governed self-control mechanisms such as overt self-verbalization may hold the possibility of an increased stability of self-control in children. A critical limitation of externally-applied processes to control the child's behavior, such as reward and punishment training, is the difficulty in demonstrating, not the establishment of inhibition, but rather the temporal stability of the effect significantly beyond the training situation. We are now preparing a study which will attempt to assess the effect of overt self-verbalization of specific utterances on delay maintenance behavior in test sessions temporally removed from the training period. Since the child's use of overt self-verbalization is a readily observable phenomenon, we can determine if this particular mechanism is being employed by the child in self-control test situations temporally removed from the training period.

In summary, preschool aged children can maintain delay. The overt self-verbalization of specific utterances can affect the likelihood of successful delay maintenance behavior. Considered with the results of studies on the role of self-verbalization on resistance to deviation, and on the cognitive style dimension of reflection-impulsivity (Meichenbaum & Goodman, 1971) among others, the present study is further evidence of the power of self-verbalization on the child's self-control behavior--a further demonstration of the efficacy of employing subject-governed self-control mechanisms which take advantage of the developing cognitive and linguistic capabilities of the child.

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